REMARKS

The claims have been amended in order to address the rejections under 35 USC 112 made by the Examiner in the outstanding Office Action. It is respectfully submitted that the currently presented claims are clearly cured of all formal defects.

Claims 38-41 have been rejected under 35 USC 103(a) as being unpatentable over Yamashita et al in view of Majima. Applicants once again respectfully traverse this ground of rejection.

In its broadest form, the presently claimed invention is directed to a method of driving nematic liquid crystal for a liquid crystal display device having a liquid crystal panel sandwiching nematic liquid crystals between two electrodes that are disposed between two polarizing plates. The method comprises the steps of applying a voltage corresponding to image data between the two electrodes and thereby depicting an image on the liquid crystal panel and applying a voltage between the two electrodes in each frame period for erasing the image depicted by the voltage corresponding to the image data on the liquid crystal panel within the same frame period.

A second embodiment of the present invention is directed to a method of driving nematic liquid crystal for a liquid display device having nematic liquid crystal sandwiched between two electrodes that are disposed between two polarizing plates. This method comprises the steps of applying a first voltage corresponding to image data between the two electrodes in each frame period to drive the nematic liquid crystal to a state corresponding to the image data and applying a second predetermined voltage between the two electrodes in the same frame period to return the liquid crystal to a predetermined state, wherein the nematic liquid crystal does not change into a different phase.

As discussed in the present specification, the present invention utilizes a specific status of applied voltage wave

forms in order to cause quick changes in optical transmittance with a change in applied voltage level. Typically, nematic liquid crystals need as much as tens of milliseconds to hundreds of milliseconds for response so that it has been believed to be impossible to provide a speed of response acceptable for displaying color images by 3-color backlighting. The present invention has been arrived at in order to overcome this problem. It is respectfully submitted that the prior art cited by the Examiner does not disclose the presently claimed invention.

The Yamashita et al reference discloses a method of driving a liquid crystal display panel which comprises the steps of inverting an image signal every time a horizontal sync signal is generated, applying the image signal to source lines of the display panel and synchronously applying an inversion control signal to the common opposite electrode of the display panel to reduce the driving voltage of the source lines. However, in contrast to the Examiner's position, this reference does not teach the application of a voltage (S1'-Sm') corresponding to image data (CM') between the two electrodes. Yamashita et al discloses the application of a voltage to one of two electrodes. The Examiner has also stated that Yamashita et al applies an appropriate voltage (VITO, a constant voltage) between the two electrodes. Applicants once again respectfully disagree. Yamashita et al shows the application of another voltage to the other of the two electrodes. In Yamashita et al, only "VITO-Vs" is applied between the two electrodes as shown in Figure 2 and discussed in column 4, lines 25-29. The voltage "VITO-Vs" corresponds to image data and the application of a constant voltage is not shown by this reference.

In contrast to Yamashita et al, in the present invention, an image data-corresponding voltage is applied between the two electrodes and a constant voltage is then applied between the two electrodes so that the resulting voltage across the two electrodes changes from an image data-corresponding voltage to

a constant voltage and then changes to another image-corresponding voltage and then to the constant voltage. This clearly is not shown in Yamashita et al.

The Examiner has also admitted that Yamashita et al does not teach where the appropriate voltage is applied in each frame period to erase the image depicted by the voltage corresponding to the image data on the liquid crystal panel within the same frame period and has cited Majima et al to cure this deficiency. Applicants respectfully submit that the Majima et al reference does not cure the deficiencies contained in Yamashita et al.

The Majima et al reference discloses a graphic image display system which allows image data input through a data input apparatus to be displayed precisely. The system comprises a scanning laser beam, a thermal liquid crystal cell and a transparent data touch tablet. As a nematic liquid crystal, Majima discloses in column 4, lines 43-46, that a cyano-biphenyl system liquid crystal changes phase from smectic A phase to a nematic phase rather than a nematic liquid crystal. The liquid crystal panel in this reference is at a smectic phase at normal temperature and once the writing is carried out with the laser beam, the increase in its temperature causes a disruption of the alignment of the liquid crystal. When the laser beam is interrupted, the liquid crystal rapidly cools and the alignment of the liquid crystal returns to the smectic phase with a disordered state of the retained alignment. This results in the portion exposed to the laser beam being kept opaque. As such, the liquid crystal panel in this reference is completely different from a liquid crystal panel configured to depict images by applied voltages and is not properly combinable with Yamashita et al.

Most importantly, there is no disclosure in Majima et al regarding the application of an image data-corresponding voltage between <u>two</u> electrodes and then applying a constant voltage between the two electrodes so that the resulting voltage across the two electrodes changes from an image data-

corresponding voltage. As such, the references cited by the Examiner do not even present a showing of prima facie obviousness under 35 USC 103(a) with respect to the presently claimed invention.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,

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